Hazardous Waste (HW) Determination

TH-H1 Grandballroom F

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Department of Toxic Substances Control: Enforcement Emergency Response Division

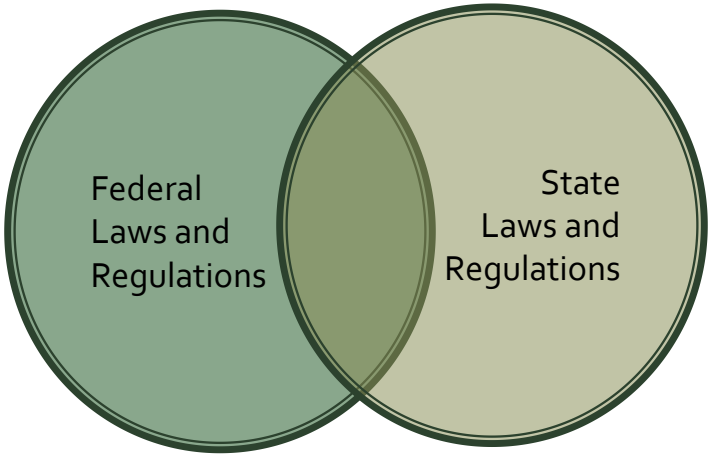
Kevin Sanchez, Senior Environmental Scientist (Supervisory)

Cher Vue, Senior Environmental Scientist (Specialist)

Laws and regulations

- **Federal**: Statute: (RCRA):
  - Resource Conservation and Recovery Act Chapter 42, United States Code
  - Regulations: (40 CFR):
    - Title 40, Code of Federal Regulations (part 260 – 279)

- **State**: Statute: (HSC)
  - California Health and Safety Code, division 20, chapter 6.5
  - Regulations: (T22 CCR)
    - California Code of Regulations, title 22, division 4.5



What is a HW determination?

- A regulatory process (or a set of steps) one follows to identify if that person has a hazardous waste

Who makes the determination?

- **The generator**
- **22 CCR §66260.200, subsection (c):** It shall be the generator's responsibility to determine if the waste is classified as a HW pursuant to section 66260.200(a).
- **22 CCR §66260.200, subsection (c):** a generator who incorrectly determines a HW is non-HW…is subject to enforcement action.

It's a hazardous waste

Hazardous Waste Regulatory Structure

Generators

Chapter 12

Transporters

Chapter 13

Facilities

Recycling
Treatment
Disposal

Chapter 14

Exemptions and Exclusions

What's the difference between an exemption and exclusion?

- **Exclusions** – promote recycling or material already subject to regulation – not subject to regulations or other excluded from regulation
- **Exemptions** – less regulated if certain conditions are met. Still a hazardous waste.

It's non-hazardous?

Not subject to hazardous waste regulatory structure

- Other regulatory structures?
  - Clean Air Act
  - Clean Water Act
  - Solid Waste Act
  - Toxic Substances Control Act
  - Hazardous Substances Act

U.S. EPA CLEAN WATER ACT CELEBRATING 50 YEARS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY TSCA CERTIFIED

What is the process/procedure?

- Is the material a waste?
- Is the material or waste excluded or exempted?
- Is the waste listed?
- Does the waste exhibit a characteristic?
- Is the waste "used oil" or a material that contains "used oil"?

Used oil exception

- A waste can be hazardous by being “used oil” or
- By being contaminated with or containing used oil
- It’s not in hazardous waste regulations
- Does not have to exhibit a characteristic

Example

- An unused pesticide containing 50% heptachlor (a P059 listed waste) and 50% toxaphene (a P123 listed waste) is to be discarded. Is the pesticide a listed hazardous waste?

Example

- If a used oil filter is not drained of its used oil, what is the regulatory status of the used oil filter?

- If a rag or kitty litter is used to clean up an oil spill, what is the regulatory status of the material?

Focus: Hazardous Waste

- Has to be **a waste + hazardous (waste) = hazardous waste**
- In other words has to be a **discarded material** + exhibits a **characteristic** or **listed = hazardous waste**
- Exception: if **excluded** (from definition of waste or hazardous waste) or **exempted**

Definition of a waste

HSC §25124

- A waste is any **discarded** material (in any physical form, such as solid, semi-solid, liquid or contained gas) that is not excluded under section 66261.4(a) or (e) or 25143.2(b) or (d).

Discarded means:

- to throw away or let go of something that is no longer needed or useful

- Primarily used to distinguish from products

How do products become wastes?

- If mislabeled or in deteriorated packaging could be wastes if:
  - It poses a threat to human health and the environment (22 CCR section 66261.2(f))
- Documentation – generators must show disposition and known market (22 CCR section 66261.2(g))

Definition of a waste

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Clean Air Act (CAA)

- Regulates gaseous materials emitted to the air
- CA Air Resources Board or Regional Air Districts

Questions

- What if the facility is required to use an air pollution control device?
- What if the facility is storing a hazardous waste?

Definition of discarded?

- 22 CCR §66261.2

- A material is discarded if it is:
  - Relinquished (or disposed or incinerated)
  - Recycled
  - Inherently waste-like
  - Some products that are improperly labeled or packaged

Relinquished

- 22 CCR section 66261.2(c) A material is relinquished:
  - Disposed of
  - Burned or incinerated
  - Accumulated, stored or treated (but not recycled) before, or in lieu of being disposed of or burned or incinerated

  - A relinquished material is a waste

Disposal definition

- the discharge, deposit, injection, dumping, spilling, leaking or placing of any waste or hazardous waste into or on any land or water so that such waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters; or
- the abandonment of any waste.

Common types of disposal

- Landfill
- Discharge to water
- Abandonment

- Incineration (not disposal but part of relinquished)

Discharge of hazardous waste to water

- Duplicative requirements

- Hazardous waste control laws
- Clean Water Act (CWA)

- What about under RCRA?
- What is the Wastewater Treatment Unit exemption?

Example

- *Company A* uses solvent to rinse equipment used for painting. The solvent is collected in a container. The solvent exhibits a characteristic. The solvent is eventually disposed of and is typically done so every two months.

- **Is the solvent a waste?**

Example

- *A lab* is closing and is in the process of decontaminating the building. There are a number of unused chemicals in plastic containers in one of the rooms of the building. The unused chemicals exhibit characteristics and some are listed.

- **Are the unused chemicals waste?**

Recycled

- A material is a waste if it's recycled on any of the following ways:
  - Used in a manner constituting disposal
  - Used by being burned for energy recovery
  - Accumulated speculatively
  - Reclaimed

Use or Reuse vs. Reclamation

- Key to understanding recycling is to understand the distinction between these 2 types of recycling

Waste Determination process and procedure

- Is the material a waste?
- Is the material or waste excluded or exempted?
- Does the waste exhibit a characteristic of a hazardous waste?
- Is the waste listed in Appendix X?
- Is the waste listed in article 4 or 4.1?
- Is the waste "used oil" or a material that contains "used oil"?

3. Characteristics of a hazardous waste

Characteristic of corrosivity

22 CCR §66261.22 – D002

- pH ≤ 2 or ≥ 12.5
  - Aqueous solutions
  - Not aqueous, mixed with an equal amount of water*

Characteristic of corrosivity

22 CCR §66261.22 – D002

- Steel corrosion rate
  > 6.35 mm per year
  - Liquid and Not Liquid*

Ignitable wastes

Wastes that can readily catch fire and sustain combustion

Same as federal characteristic

Characteristic of ignitability

22 CCR §66261.21 – D001

- Liquid with a flash point
  < 140 °F or 60 °C

Characteristic of ignitability (cont.)

22 CCR §66261.21 – D001

- What if it's not a liquid?
  - Alcohol exclusion
- Solids
- Ignitable compressed gases
- Oxidizer

Characteristic of reactivity

22 CCR §66261.23 - Waste code D003

Explode or react violently when exposed to water or under normal handling conditions

Create toxic fumes or gases when exposed to water or under normal handling conditions

Meets the criteria for explosive under the Department of Transportation rules

Toxic wastes

- Wastes that can cause harm to human health and the environment

Characteristic of Toxicity

22 CCR § 66261.24

- Eight (8) elements/parts to this characteristic
  - Waste can be toxic if it falls under any of these elements or parts

Toxicity Characteristics – 66261.24(a)

1

2

3

4

5

6

7

8

Characteristic of toxicity (TCLP)

22 CCR §66261.24(a)(1)

The federal toxicity characteristic is based on the leach test called the TCLP or "Toxicity Characteristic Leaching Procedure"

Subsection (a)(1) incorporates the TCLP into California's hazardous waste regulations

The extracts are analyzed and the lab (analytical) results are compared to the regulatory threshold levels in the table

Characteristic of Toxicity

22 CCR §66261.24(a)(2)

- Subsection (a)(2) is **unique to California's** hazardous waste regulations
- To determine if a waste exhibits the characteristic of a hazardous waste by this criteria, samples of the waste are prepared for analysis of their total and extractable contents

Characteristic of Toxicity (WET/Totals)

22 CCR §66261.24(a)(2)

Inorganic constituents

- Both WET soluble and total concentrations

Organic constituents

- Both WET soluble and total concentrations

Persistent and Bioaccumulative Substances

	STLC	TTLC
Substance [a], [b]	***mg/l***	***Wet-Weight mg/kg***
Antimony and/or antimony compounds	15	500
Arsenic and/or arsenic compounds	5.0	500
Asbestos		1.0
		(as percent)
Barium and/or barium compounds (excluding barite)	100	10,000 [c]
Beryllium and/or beryllium compounds	0.75	75
Cadmium and/or cadmium compounds	1.0	100
Chromium (VI) compounds	5	500
Chromium and/or chromium (III) compounds	5 [d]	2,500
Cobalt and/or cobalt compounds	80	8,000
Copper and/or copper compounds	25	2,500
Fluoride salts	180	18,000
Lead and/or lead compounds	5.0	1,000

Characteristic of Toxicity
Comparing totals with TCLP or WET

WET uses a 10:1 ratio of solid sample (waste) extract to extractant fluid

TCLP uses a 20:1 ratio of solid sample (waste) extract to extractant fluid

Example

- You collected samples and results from performing the totals (TTLC) test indicated concentrations of Lead to be: 1,750 mg/kg
- Would you request to run the WET and TCLP tests?

Sample CV-01 (*Regulatory Limits*)	Predicted Values	Actual Values
Totals (*1,000 mg/kg*)	**1,750 mg/kg**	**1,750 mg/kg**
WET (*5 mg/L*)	175 mg/L	50.9 mg/L
TCLP (*5 mg/L*)	17.5 mg/L	5.11 mg/L

Other criteria for toxicity

Acute Toxicity

- Oral toxicity 66261.24(a)(3)
- Dermal toxicity 66261.24(a)(4)
- Inhalation toxicity 66261.24(a)(5)
- Aquatic toxicity 66261.24(a)(6)

Specific Chemicals at 0.001% by weight 66261.24(a)(7)(A-P)

Carcinogenicity 66261.24(a)(8)

BREAK TIME!

Listed Hazardous Waste

- There a six lists of hazardous waste:

- F- listed
- K-listed
- P-listed
- U-listed
- M-listed
- Appendix X (a list, but not listed hazardous waste)

What is appendix X?

- It is a tool for generators

- List of 791 chemicals
- List of 66 common names or types of hazardous waste
- Characteristics of concern noted (X, C, I, R)

Article 4.1 – DTSC listed hazardous waste

Mercury containing wastes

- M001: Mercury light switches in cars and cars with them prior to crushing, baling, shredding
- M002: Other mercury switches in products, including appliances
- M003: Mercury containing lamps and products with mercury lamps
- M004: Mercury added novelties

F, K, P, U lists

22 CCR Article 4: RCRA lists

- Lists were created based on US EPA criteria (40 CFR 261.11)
- A waste is compared to a waste described on the lists
- The source of the waste (i.e., the process that generated the waste) is as (if not more) important the waste's constituents
- Must meet all aspects of the listing for it to apply

Three categories of lists

1. Non-specific sources (F-lists)
2. Specific sources (K-lists)
   - Hazard code – the reason the waste is listed (I, C, R, E, H, T)
3. Discarded commercial chemical products, off-specification species, and spill residues (P,U)
   - Hazard code H
     - Acute hazardous waste (P-list)
   - Hazard code T
     - Toxic (U-list)

(F and K-list)

22 CCR §66261.32

- Waste codes with "F" or “K” followed by a three-digit number
- Dependent on the industry (for K), waste source or process specified in the description
- Not dependent on constituents or their concentrations in the waste

Example – F001 listed HW

- The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons;
- all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005;
- and still bottoms from the recovery of these spent solvents and spent solvent mixtures;

Example – F037 listed HW

- Petroleum refinery primary oil/water/solids separation sludge - any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries.
- Such sludges include, but are not limited to, those generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow.

Example – F037 listed HW

- Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units as defined in section 66261.31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing.

Example – K050 listed HW

- API separator sludge from the petroleum refining industry

Example – K048 listed HW

- dissolved air flotation (DAF) float from the petroleum refining industry;

Example – F038 listed HW

- petroleum refinery secondary (emulsified) oil/water/solids separation sludge - any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries.
- Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units; tanks and impoundments; and all sludges generated in dissolved air flotation (DAF) units..

Example – F038 listed HW

- Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges and floats generated in aggressive biological treatment units as defined in section 66261.31(b)(2) (including sludges and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are not included in this listing

Discarded commercial chemical products, off-spec. species, and spill residues (P & U lists)

22 CCR §66261.33(e) and (f)

- Waste code with a "P" or "U" with a three-digit number (e.g. P001, U001)
- "P" wastes are acutely hazardous waste (H)
- "U" wastes are toxic hazardous waste (T)

Discarded commercial chemical products, off-spec. species, and spill residues (P & U lists)

22 CCR §66261.33(e) and (f)

- To be listed:
  - The chemical must be unused and discarded
  - The chemical must be pure (i.e., the sole active ingredient in a formulation)
  - Cannot have been used or become spent
  - Cannot have been mixed with other chemicals/active ingredients to form a product

Example – U220 Toluene

- Unused paint, containing toluene (U220) is to be discarded. Is the discarded paint a U220 listed hazardous waste?

Example – Acetone – U002 listed

- Acetone is a U002 listed HW. It is placed on a rag and used to remove paint. Is the rag a U002 listed HW?

Example – U122 Formaldehyde

- Unused embalming fluid that contains formaldehyde and some colorants and perfumes is to be discarded. What is the regulatory status of the discarded unused embalming fluid?

Any Questions?

Kevin Sanchez, Senior Environmental Scientist (Supervisory)
Cher Vue, Senior Environmental Scientist (Specialist)
Regulatory Assistance Office:
rao@dtsc.ca.gov
Toll-Free in CA: (800) 728-6942
Outside CA: (916) 324-2439